

## Section 5-3: Inequalities in One Triangle

By the end of this lesson, you should be able to answer:

- How do you recognize and apply properties of inequalities to the measures of the angles of a triangle?
- How do you recognize and apply properties of inequalities to the relationships between the angles and sides of a triangle?

Define the following:

1. Inequality

Properties of Inequality for Real Numbers:

1. Comparison Property of Inequality

2. Transitive Property of Inequality

3. Addition Property of Inequality

4. Subtraction Property of Inequality

Theorems:

5.8 - Exterior Angle Inequality

Angle-Side Relationships in Triangles

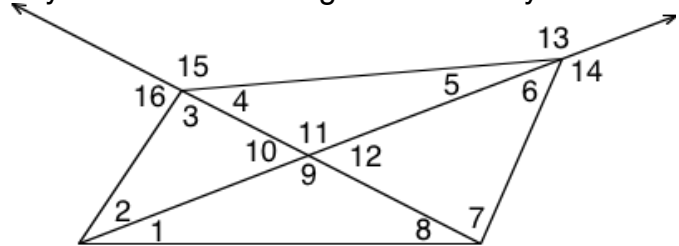
5.9 -

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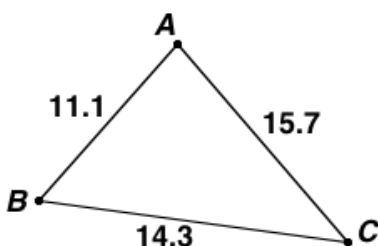
*Example 1:* Use the Exterior Angle Inequality to list all of the angles that satisfy the stated condition.

a. Measures less than  $m\angle 14$

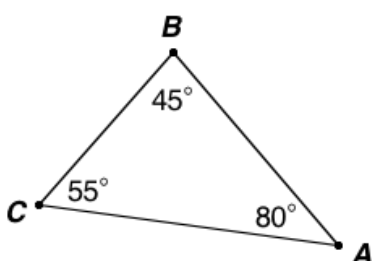
b. Measures greater than  $m\angle 5$



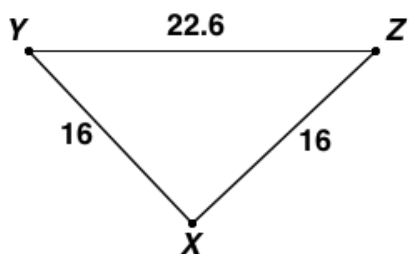
*Example 2:* List the angles of  $\triangle ABC$  in order from smallest to largest. (not to scale)



*Example 3:* List the sides of  $\triangle ABC$  in order from shortest to longest. (not to scale)



*Example 4:* Ebony is following directions for folding a handkerchief to make a bandana for her hair. After she folds the handkerchief in half, the directions tell her to tie the two smaller angles of the triangle under her hair. If she folds the handkerchief with the dimensions shown, which two ends should she tie?



Problem Set:

"Health is not simply the absence of sickness. - Hannah Green"